**Short Title:**

Mexico Water Resources

**Long Title:**

Utilizing NASA Earth Observations to detect factors contributing to hypoxic events in the southern Gulf of Mexico

**Abstract:**

Monitoring and analyzing harmful algal blooms (HABs) and hypoxic events in the southern coastal areas of the Gulf of Mexico (GoM) is important for watershed management and mitigation of environmental degradation. This study uncovered trends and dynamic characteristics of chlorophyll-a (Chl) concentration, sea surface temperature (SST), colored dissolved organic matter index (CDOM), and photosynthetically available radiation (PAR), as evident in 8-day standard mapped image (SMI) products from the MODIS instrument on the Aqua platform from 2002-2015 using Clark Labs TerrSet Earth Trends Modeler (ETM). Additionally, sediment and nutrient loading values of the Grijalva-Usumacinta watershed were modeled using the ArcGIS Soil and Water Assessment Tool (SWAT). Normalized Difference Turbidity Index (NDTI) and Floating Algae Index (FAI) were generated using Landsat 8 Operational Land Imager (OLI) scenes for 2014-2015. These results indicated high levels of nutrient and sediment loading from the Grijalva-Usumacinta River Basin, correlating to high frequencies of hypoxic events and HABs in the coastal region of the southern GoM.

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